



DEPARTMENT OF LABOR

Mine Safety and Health Administration

Petition for Modification of Application of Existing Mandatory Safety Standards

AGENCY: Mine Safety and Health Administration, Labor.

ACTION: Notice.

SUMMARY: This notice is a summary of a petition for modification submitted to the Mine Safety and Health Administration (MSHA) by the party listed below.

DATES: All comments on the petition must be received by MSHA's Office of Standards, Regulations, and Variances on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit comments identified by Docket No. MSHA-2022-0039 by any of the following methods:

1. *Federal eRulemaking Portal:* <https://www.regulations.gov>. Follow the instructions for submitting comments for MSHA-2022-0039.
2. *Fax:* 202-693-9441.
3. *Email:* petitioncomments@dol.gov
4. *Regular Mail or Hand Delivery:* MSHA, Office of Standards, Regulations, and Variances, 201 12th Street South, Suite 4E401, Arlington, Virginia 22202-5452,

Attention: S. Aromie Noe, Director, Office of Standards, Regulations, and Variances. Persons delivering documents are required to check in at the receptionist's desk in Suite 4E401.

Individuals may inspect copies of the petition and comments during normal business hours at the address listed above. Before visiting MSHA in person, call 202-693-9455 to make an appointment, in keeping with the Department of Labor's COVID-19 policy. Special health precautions may be required.

FOR FURTHER INFORMATION CONTACT: S. Aromie Noe, Office of Standards, Regulations, and Variances at 202-693-9440 (voice), Petitionsformodification@dol.gov (email), or 202-693-9441 (fax). [These are not toll-free numbers.]

SUPPLEMENTARY INFORMATION: Section 101(c) of the Federal Mine Safety and Health Act of 1977 and title 30 of the Code of Federal Regulations (CFR) part 44 govern the application, processing, and disposition of petitions for modification.

I. Background

Section 101(c) of the Federal Mine Safety and Health Act of 1977 (Mine Act) allows the mine operator or representative of miners to file a petition to modify the application of any mandatory safety standard to a coal or other mine if the Secretary of Labor determines that:

1. An alternative method of achieving the result of such standard exists which will at all times guarantee no less than the same measure of protection afforded the miners of such mine by such standard; or
2. The application of such standard to such mine will result in a diminution of safety to the miners in such mine.

In addition, sections 44.10 and 44.11 of 30 CFR establish the requirements for filing petitions for modification.

II. Petition for Modification

Docket Number: M-2022-013-C

Petitioner: Harrison County Coal Resources, Inc., 464 North Portal Road, Wallace, West Virginia, 26448.

Mine: Harrison County Mine, MSHA ID No. 46-01318, located in Harrison County, West Virginia.

Regulation Affected: 30 CFR 75.1700, Oil and gas wells.

Modification Request: The petitioner requests a modification of 30 CFR 75.1700 to permit mining within a 300 feet barrier of slant directionally drilled (SDD) wells and through coalbed methane (CBM) gas wells.

The petitioner states that:

(a) The proposed alternative method has been successfully used to prepare CBM wells for safe intersection by using one or more of the following methods: cement plug, polymer gel, bentonite gel, active pressure management and water infusion, and remedial work.

(b) The proposed alternative method will prevent the CBM well methane from entering the underground mine.

(c) An existing Petition for Modification (Docket No. M-2016-019-C granted on June 30, 2017) allows the plugging methods outlined in the proposed alternative method to be used at the Harrison County Mine for vertical oil and gas wells.

The petitioner proposes the following alternative method:

(a) District Manager approval required:

(1) A minimum working barrier of 300 feet in diameter shall be maintained around all SDD wells until approval to proceed with mining has been obtained from the District Manager. This barrier extends around all vertical and horizontal branches drilled in the coal seam. This barrier also extends around all vertical and horizontal branches within overlying coal seams subject to caving or subsidence from the coal seam being mined when methane leakage through the subsidence zone is possible.

(2) The District Manager may choose to approve each well or a group of wells as applicable to the conditions. To prepare the SDD wells for intersection, the District Manager may require a certified review by a professional engineer to assess the applicability of the proposed system(s) to the mine-specific conditions.

(b) Mandatory computations and administrative procedures prior to plugging or replugging SDD wells after District Manager approval has been obtained:

(1) Probable Error of Location - Directional drilling systems rely on sophisticated angular measurement systems and computer models to calculate the estimated location of the well bore. This estimated hole location is subject to cumulative measurement errors so that the distance between actual and estimated location of the well bore increases with the depth of the hole. Modern directional drilling systems are typically accurate within one or two degrees depending on the specific equipment and techniques.

(i) The Probable Error of Location ($EE\rho\rho$) is defined by a cone described by the average accuracy of angular measurement ($\alpha\alpha$) around the length of the hole ($LLHH$), calculated by the following equation: $EE\rho\rho = LLHH \times \sin \alpha\alpha$. For example, mining projected to intersect a well at a point 4,000 feet from the collar, measured along the well path, would consider a probable error radius of 69.8 feet about the projected point of intersection. $EE\rho\rho = 4,000 \times \sin(1^\circ) = 69.8$.

(ii) In addition to the Probable Error of Location, the true point of intersection may be affected by underground survey errors, surface survey errors, and survey errors.

(2) Minimum Working Barrier Around Well - The minimum working barrier around any CBM well or branches of a CBM well in the coal seam is 50 feet greater than the calculated Probable Error of Location.

(i) For example, mining projected to intersect a well at a point 4,000 feet from the collar, measured along the well path, would consider a probable error radius of 69.8 feet about the projected point of intersection. Therefore, the minimum working barrier around this point of the well bore is 120 feet. The additional 50 feet is a reasonable separation between the probable location of the well and mining operations.

(ii) When mining is within the minimum working barrier distance from a CBM well or branch, the operator must comply with the provisions of the Proposed Decision and Order.

(iii) The District Manager may require a greater minimum working barrier around CBM wells where geologic conditions, historical location errors, or other factors warrant a greater barrier.

(3) Ventilation Plan Requirements - The Ventilation Plan shall identify SDD CBM wells within the active mining area and any projected mining area as specified in 30 CFR 75.372(b)(14) and, where intersection is projected, note the well casing type, diameter, and preparation method for the defined working barrier. If the well has not been prepared for intersection, the techniques which the operator plans to implement shall also be included. Actions necessary to implement such techniques, as well as required operational precautions for mining within the minimum working barrier shall also be included. Further operational precautions to be taken when mining within the minimum working barrier may be required by the District Manager.

(4) Ventilation Map -The ventilation map specified in 30 CFR 75.372 shall contain the following information:

- (i) The surface location of all CBM wells in the active mining area and any projected mining area as specified in 30 CFR 75.372(b)(14);
- (ii) Identifying information of CBM wells (American Petroleum Institute or equivalent);
- (iii) The coal seam intersection of all CBM wells;
- (iv) The horizontal extents in the coal seam of all CBM wells and branches;
- (v) If intersected, the date of mine intersection and the location of such intersection relative to the expected point.

(c) Mandatory procedures for plugging or replugging SDD wells:

(1) The operator shall include in the mine ventilation plan one or more of the following methods specified in sections (c)(3) through (c)(7) to prepare SDD wells for safe intersection.

(2) The methods approved in the ventilation plan must be completed on each SDD well before mining encroaches on the minimum working barrier around the well or branch of the well in the coal seam being mined. If methane leakage through subsidence cracks is a problem when retreat mining, the minimum working barrier must be maintained around wells and branches in

overlying coal seams or the wells and branches must be prepared for safe intersection as specified in the mine ventilation plan.

(3) Cement Plug - Cement may be used to fill the entire SDD hole system.

(i) Squeeze cementing techniques are necessary for SDD plugging due to the lack of tubing in the hole. Cement should fill void spaces and eliminate methane leakage along the hole. Once the cement has cured, the SDD system may be intersected multiple times without further hole preparation.

(ii) Gas cutting occurs if the placement pressure of the cement is less than the methane pressure in the coal seam. Under these conditions, gas will bubble out of the coal seam and into the unset cement creating a pressurized void or a series of interconnected pressurized voids. Water cutting occurs when formation water and standing water in the hole invades or displaces the unset cement. Standing water must be bailed out of the hole or driven into the formation with compressed gas to minimize water cutting. The cement pressure must be maintained higher than the formation pressure until the cement sets to minimize both gas and water cutting. The cementing program in the ventilation plan must address both gas and water cutting.

(iii) Due to the large volume to be cemented and potential problems with cement setting prior to filling the entire SDD system, adequately sized pumping units with back-up capacity must be used. Various additives such as retarders, lightweight extenders, viscosity modifiers, thixotropic modifiers, and fly ash may be used in the cement mix. The volume of cement pumped should exceed the estimated hole volume to ensure the complete filling of all voids.

(iv) The complete cementing program, including hole dewatering, cement, additives, pressures, pumping times and equipment must be specified in the ventilation plan. The safety data sheets (SDSs) for all cements, additives, and components and details regarding personal protective equipment and techniques to protect workers from the potentially harmful effects of the cement and cement components shall be included in the ventilation plan.

(v) Records of cement mixes, cement quantities, pump pressures, and flow rates and times should be retained for each hole plugged. SDD holes may be plugged with cement years in advance of mining. The District Manager shall require suitable documentation of the cement plugging to approve mining within the minimum working barrier around CBM wells.

(4) Polymer Gel - Polymer gels start out as low viscosity, water-based mixtures of organic polymers that are crosslinked using time-delayed activators to form a water-insoluble, high-viscosity gel after being pumped into the SDD system.

(i) Although polymer gel systems never solidify, the activated gel should develop sufficient strength to resist gas flow. A gel that is suitable for treating SDD wells for mine intersection will reliably fill the SDD system and prevent gas-filled voids. Any gel chemistry used for plugging SDD wells should be resistant to bacterial and chemical degradation and remain stable for the duration of mining through a SDD system.

(ii) Water may dilute the gel mixture to the point where it will not set to the required strength. Thus, water in the holes must be removed before injecting the gel mixture. Water removal can be accomplished by conventional bailing and then injecting compressed gas to squeeze the water that accumulates in low spots back into the formation. Gas pressurization should be continued until the hole is dry.

(iii) Dissolved salts in the formation waters may interfere with the cross-linking reactions. Any proposed gel mixtures must be tested with actual formation waters.

(iv) Equipment to mix and pump gels should have adequate capacity to fill the hole before the gel sets. Back-up units should be available while pumping.

(v) The volume of gel pumped should exceed the estimated hole volume to ensure the complete filling of all voids and allow for gel to infiltrate the joints in the coal seam surrounding the hole. Gel injection and setting pressures should be specified in the ventilation plan.

(vi) To reduce the potential for an inundation of gel, the final level of gel should be close to the level of the coal seam and the remainder of the hole should remain open to the atmosphere

until mining in the vicinity of the SDD system is completed. Packers may be used to isolate portions of the SDD system.

(vii) The complete polymer gel program, including the advance testing of the gel with formation water, dewatering systems, gel specifications, gel quantities, gel placement, pressures, and pumping equipment must be specified in the ventilation plan. The SDSs for all gel components and details regarding personal protective equipment and techniques to protect workers from the potentially harmful effects of the gel and gel components shall be included in the ventilation plan. A record of the calculated hole volume, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with gel. Other gel chemistries other than organic polymers may be included in the ventilation plan with appropriate methods, parameters, and safety precautions.

(5) Bentonite Gel - High-pressure injection of bentonite gel into the SDD system will infiltrate the cleat and butt joints of the coal seam near the well bore and effectively seal these conduits against the flow of methane.

(i) Bentonite gel is a thixotropic fluid that sets when it stops moving. Bentonite gel has a significantly lower setting viscosity than polymer gel. While the polymer gel fills and seals the borehole, the lower strength bentonite gel must penetrate the fractures and jointing in the coal seam to be effective in reducing formation permeability around the hole. The use of bentonite gel is restricted to depleted CBM applications with low abandonment pressures and limited recharge potential. In general, these applications will be in mature CBM fields with long production histories.

(ii) A slug of water should be injected prior to the bentonite gel to minimize moisture-loss bridging near the well bore. The volume of gel pumped should exceed the estimated hole volume to ensure that the gel infiltrates the joints in the coal seam for several feet surrounding the hole. Due to the large gel volume and potential problems with premature thixotropic setting, adequately sized pumping units with back-up capacity are required.

(iii) Additives to the gel may be required to modify viscosity, reduce filtrates, reduce surface tension, and promote sealing of the cracks and joints around the hole. To reduce the potential for an inundation of bentonite gel, the final level of gel should be approximately the elevation of the coal seam and the remainder of the hole should remain open to the atmosphere until mining in the vicinity of the SDD system is completed. If a water column is used to pressurize the gel, it must be bailed down to the coal seam elevation prior to intersection.

(iv) The complete bentonite gel program, including formation infiltration and permeability reduction data, hole pretreatment, gel specifications, additives, gel quantities, flow rates, injection pressures, and infiltration times, must be specified in the ventilation plan. The ventilation plan should list the equipment used to prepare and pump the gel. The SDSs for all gel components and details regarding personal protective equipment and techniques to protect workers from the potentially harmful effects of the gel and additives shall be included in the ventilation plan. A record of hole preparation, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with bentonite gel.

(6) Active Pressure Management and Water Infusion - Reducing the pressure in the hole to less than atmospheric pressure by operating a vacuum blower connected to the wellhead may facilitate safe intersection of the hole by a coal mine. The negative pressure in the hole will limit the quantity of methane released into the higher pressure mine atmosphere. If the mine intersection is near the end of a horizontal branch of the SDD system, air will flow from the mine into the upstream side of the hole and be exhausted through the blower on the surface. On the downstream side of the intersection, if the open hole length is short, the methane emitted from this side of the hole may be diluted to safe levels with ventilation air. Conversely, safely intersecting this system near the bottom of the vertical hole may not be possible because the methane emissions from the multiple downstream branches may be too great to dilute with ventilation air. The methane emission rate is directly proportional to the length of the open hole.

(i) Successful application of vacuum systems may be limited by caving of the hole or water collected in dips in the SDD system. Another important factor in the success of vacuum systems is the methane liberation rate of the coal formation around the well; older, more depleted wells that have lower methane emission rates are more amenable to this technique. The remaining methane content and the formation permeability shall be addressed in the ventilation plan.

(ii) Packers may be used to reduce methane inflow into the coal mine after intersection. All packers on the downstream side of the hole must be equipped with a center pipe so that the inby methane pressure may be measured or so that water may be injected. Subsequent intersections shall not take place if pressure in a packer-sealed hole is excessive.

(iii) Alternatively, methane produced by the downstream hole may be piped to an in-mine degas system to safely transport the methane out of the mine or may be piped to the return air course for dilution. In-mine methane piping shall be protected as stipulated in "Piping Methane in Underground Coal Mines," MSHA IR1094 (1978). Protected methane diffusion zones may be established in return air courses if needed.

(iv) Detailed sketches and safety precautions for methane collection, piping, and diffusion systems must be included in the ventilation plan per 30 CFR 75.371(ee).

(v) Water infusion prior to intersecting the well will temporarily limit methane flow. Water infusion may also help control coal dust levels during mining. High water infusion pressures may be obtained prior to the initial intersection by the hydraulic head resulting from the hole depth or by pumping. Water infusion pressures for subsequent intersections are limited by leakage around in-mine packers and limitations of the mine water distribution system. If water is infused prior to the initial intersection, the water level in the hole must be lowered to the coal seam elevation before the intersection.

(vi) The ventilation plan should include/address the following:

(A) The complete pressure management strategy including negative pressure application, wellhead equipment, use of packers, in-mine piping, methane dilution, and water infusion.

(B) Procedures for controlling methane in the downstream hole.

(C) Remaining methane content and formation permeability.

(D) Potential for the coal seam to cave into the well.

(E) Dewatering methods.

(F) Record of the negative pressures applied to the system, methane liberation, use of packers, any water infusion pressures, and application time should be retained for each intersection.

(7) Remedial work - If problems are encountered in preparing the holes for safe intersection, remedial measures must be taken to protect the miners. For example, if only one-half of the calculated hole volume of cement could be placed into a SDD well due to hole blockage, holes should be drilled near each branch that will be intersected and squeeze cemented using pressures sufficient to fracture into the potentially empty SDD holes. The District Manager approval of the ventilation plan for remedial work shall be obtained on a case-by-case basis.

(d) Mandatory procedures after District Manager approval to mine within the minimum working barrier around the well or branch of the well:

(1) The operator, the District Manager, the miners' representative, or the State may request a conference prior to any intersection or after any intersection to discuss issues or concerns.

Upon receipt of any such request, the District Manager shall schedule a conference. The party requesting the conference shall notify all other parties listed above within a reasonable time prior to the conference to provide opportunity for participation.

(2) The operator must notify the District Manager, the State, and the miners' representative at least 48 hours prior to the intended intersection of any CBM well.

(3) The initial intersection of a well or branch of a well typically has a higher risk than subsequent intersections and indicates if the well preparation is sufficient to prevent the inundation of methane. For the initial intersection of a well or branch, the following procedures are mandatory:

(i) Entries that will intersect either vertical segments or branches of a well shall be noted with a readily visible marking that notes the distance to the well. Such marking shall be located in the last open crosscut when mining is within 100 feet of the well.

(ii) When a segment of a well will be intersected by a longwall, drilage sights shall be installed on 10 foot centers starting 50 feet in advance of the anticipated intersection. Drilage sights shall be installed in the headgate entry of the longwall and note the shield number at which the anticipated intersection is expected to occur or begin in the case of a horizontal branch.

(iii) The operator shall ensure that fire-fighting equipment, including fire extinguishers, rock dust, and sufficient fire hose to reach the working face area of the mine-through (when either the conventional or the continuous mining method is used), is available and operable during all well mine-throughs. The fire hose shall be located in the last open crosscut of the entry or room. The operator shall maintain the water line to the belt conveyor tailpiece along with a sufficient amount of fire hose to reach the farthest point of penetration on the section. When the longwall mining method is used, a hose to the longwall water supply is sufficient. All fire hoses shall be connected and ready for use, but do not have to be charged with water, during the cut-through.

(iv) The operator shall ensure that sufficient supplies of roof support and ventilation materials are available at the working section. In addition, emergency plugs, packers, and setting tools to seal both sides of the well or branch shall be available in the immediate area of the cut-through.

(v) When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall service all equipment and check for permissibility at least once daily. Daily permissibility examinations must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.

(vi) When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall calibrate the methane monitor(s) on the longwall, continuous mining machine, or cutting machine and loading machine at least once daily. Daily

methane monitor calibration must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.

(vii) When mining is in progress, the operator shall perform tests for methane with a handheld methane detector at least every 10 minutes from when the mining with the continuous mining machine or longwall face is within the minimum working barrier around the well or branch. During the cutting process, no individual shall be allowed on the return side until the mine-through has been completed and the area has been examined and declared safe. The shearer must be idle when any miners are in by the tail drum.

(viii) When using continuous or conventional mining methods, the working place shall be free from accumulations of coal dust and coal spillages, and rock dust shall be placed on the roof, rib, and floor within 20 feet of the face when mining through the well or branch. On longwall sections, rock dust shall be applied on the roof, rib, and floor up to both the headgate and tailgate pillared area.

(ix) Immediately after the well or branch is intersected, the operator shall de-energize all equipment, and the certified person shall thoroughly examine and determine the working place safe before mining is resumed.

(x) After a well or branch has been intersected and the working place determined safe, mining shall continue in by the well at a sufficient distance to permit adequate ventilation around the area of the well or branch.

(xi) No open flame shall be permitted in the area until adequate ventilation has been established around the well bore or branch. Any casing, tubing, or stuck tools will be removed using the methods approved in the ventilation plan.

(xii) No person except those directly engaged in the operation shall be permitted in the working place of the mine-through operation during active mining.

(xiii) The operator shall warn all personnel directly engaged in the operation of the planned intersection of the well or branch prior to going underground if the intersection is to occur during their shift.

(xiv) The mine-through operation shall be under the direct supervision of a certified person. Instructions concerning the mine-through operation shall be issued only by the certified person in charge.

(xv) All miners shall be in known locations and stay in communication with the responsible person, in accordance with the site-specific approved Emergency Response Plan, when active mining occurs within the minimum working barrier of the well or branch.

(xvi) The responsible person required under 30 CFR 75.1501 is responsible for well intersection emergencies. The well intersection procedures must be reviewed by the responsible person prior to any planned intersection.

(xvii) A copy of the Decision and Order shall be maintained at the mine and be available to the miners.

(xviii) The provisions of the Decision and Order do not impair the authority of representatives of MSHA to interrupt or halt the mine through operation and to issue a withdrawal order when they deem it necessary for the safety of the miners. MSHA may order an interruption or cessation of the mine-through operation and/or a withdrawal of personnel by issuing either an oral or a written order to a representative of the operator, which shall include the basis for the order. Operations in the affected area of the mine may not resume until a representative of MSHA permits resumption of mine-through operations. The operator and miners shall comply with verbal or written MSHA orders immediately. All oral orders shall be committed to writing within a reasonable time as conditions permit.

(xix) For subsequent intersections of branches of a well, appropriate procedures to protect the miners shall be specified in the ventilation plan.

(e) Mandatory procedures after SDD intersections:

(1) All intersections with SDD wells and branches that are in intake air courses shall be examined as part of the pre-shift examinations required under 30 CFR 75.360.

(2) All other intersections with SDD wells and branches shall be examined as part of the weekly examinations required under 30 CFR 75.364.

(f) Other requirements:

(1) A minimum working barrier of 300 feet in diameter shall be maintained around all SDD wells until the operator submits proposed revisions for its approved 30 CFR part 48 training plan to the District Manager. These proposed revisions shall include initial and refresher training regarding compliance with the terms and conditions stated in the Decision and Order. The operator shall provide all miners involved in the mine-through of a well or branch with training regarding the requirements of the Decision and Order prior to mining within the minimum working barrier of the next well or branch intended to be mined through.

(2) A minimum working barrier of 300 feet in diameter shall be maintained around all SDD wells until the operator has submitted proposed revisions for its approved mine emergency evacuation and firefighting program of instruction required by 30 CFR 75.1502. The operator shall revise the program to include the hazards and evacuation procedures to be used for well intersections. All underground miners shall be trained in this revised program according to the revised mine emergency evacuation and firefighting program of instruction prior to mining within the minimum working barrier.

The petitioner asserts that the alternative method proposed will at all times guarantee no less than the same measure of protection afforded the miners under the mandatory standard.

Song-ae Aromie Noe,

Director,

Office of Standards, Regulations, and Variances.